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NSF Awards Grant to Masoud Davari for Supergrid Research with Denmark

September 12, 2022



The Office of International Science and Engineering (OISE) of NSF has awarded a \$300,000 in funding to [Dr. Masoud Davari](#), associate professor of [Electrical and Computer Engineering](#) in the Paulson College of Engineering and Computing at Georgia Southern. Dr. Davari serves as the principal investigator and will collaborate with the [Center Of Reliable Power Electronics \(CORPE\)](#), directed by [Professor Frede Blaabjerg](#) at [Aalborg University Energy Department](#) in Denmark. Aalborg University's power engineering program is one of the largest and youngest in Europe, and is consistently ranked among the best across the continent and among the Best Global Universities.

The research project, entitled “*U.S.-Denmark program for advanced reliability analysis of AC/DC converters with INNOVActive conTrols in glObe-spanning supeRgrid (INNOVATOR)*”

will have graduate and/or undergraduate students researching the reliability analysis of power electronic systems between the U.S. (the [Laboratory for Advanced Power and Energy Systems](#) in the ERB) and Denmark ([CORPE](#)).

Student researchers supported by the NSF funding will also form partnerships with [CORPE's international industrial partners](#) such as ABB, Schneider Electric, Mitsubishi Electric, Fairchild Semiconductor, Danfoss, Vestas, etc., as well as CORPE's internationally renowned academic networks. Their projects in the CORPE at AAU will be associated with AC/DC power electronic converters [voltage-source converters (VSCs)] in a possible globe-spanning supergrid (GS²G) — an essential component of the energy sector to integrate renewables to respond to urgent environmental concerns caused by global warming and international agreements. Under the umbrella of smart grids, the researchers will assess and improve the reliability of VSCs with innovative controls in GS²G. The research will advance fundamental knowledge related to:

1. Enhancing the stability and performance of VSCs in GS²G

2. Integrating renewables into power and energy systems via GS²G's ac/dc grids
3. Achieving more reliable energy exchange and secure power transfer through VSCs
4. Employing state-of-the-art technologies to test VSC performance, analyzing, and improving VSC reliability — including approaches based on machine learning techniques



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